ABSTRACT

This invention provides immunologically compatible animal tissue, suitable for xenotransplantation into human patients. Sequence of the cDNA for the sheep α(1,3)galactosyltransferase has been determined, along with information about the flanking untranscribed regions and introns of the α1,3GT gene. This in turn has led to the design and implementation of targeting vectors capable of inactivating the α1,3GT gene by deleting or interrupting the protein coding region. Successfully targeted fibroblasts are used as nuclear donors for the cloning of animals in which the α1,3GT gene is inactivated. The Galα(1,3)Gal determinant does not form on endothelial and other cells of animals having homozygously inactivated α1,3GT. The tissues can be transplanted into human patients, without being subject to hyperacute rejection that would otherwise occur due to naturally occurring antibodies to the Galα(1,3)Gal determinant present in human serum. Because of the limited availability of human organs for transplantation, immunologically compatible animal tissue is an important alternative for human organs that are in such short supply for transplantation therapy.